PROCEEDINGS OF LEARNED SOCIETIES.

GEOLOGICAL SOCIETY.

January 7th, 1920.—Mr. G. W. Lamplugh, F.R.S., President, in the Chair.

The following communications were read:—

1. 'On *Syringothyris* Winchell, and certain Carboniferous Brachiopoda referred to *Spiriferina* D'Orbigny.' By Frederick John North, B.Sc., F.G.S.

This paper is the outcome of a suggestion made in 1913 by Prof. T. F. Sibly, who pointed out the desirability of an attempt to remove the uncertainty which had hitherto existed in the naming of the British species of *Syringothyris*, and of the Carboniferous Spiriferids possessing a lamellose surface ornament, which it was customary to refer to *Spiriferina* because there was no other genus for their reception, although it had long been recognized that few, if any of them, really belonged to that genus.

After indicating the exact sense in which certain frequently occurring terms are used, and reviewing the history of previous research, the Author discusses the history in Avonian times of the genus *Syringothyris*, and suggests a classification of its species.

Variations due to time, to environmental conditions, and to distribution in space, are recognized, and distinctive names are given to the mutations characteristic of certain horizons.

The syrinx (it is suggested) was a special arrangement called into existence to control the direction of, and to support the adductor-muscles, as the area of the shell increased in height. It, and the transverse plate to which it was attached, originated as a modification of an apical callosity such as existed in many Spiriferoid shells. It was initiated in Middle Devonian times, and reached its acme early in the Carboniferous Period.

All known species of *Syringothyris* have the fold in the brachial valve, and the sinus in the pedicle-valve, smooth. Species such as *S. distans*, in which the fold and sinus are plicated do not possess a syrinx, and are incorrectly referred to *Syringothyris*.

The form described by McCoy as *Spirifera laminosa* is referred to a new genus, since it has neither the punctate shell-structure of *Spiriferina*, nor the internal characters of *Syringothyris*. The genus is represented in the Lower Avonian by mutations of the species *laminosa* McCoy, and in the Upper Avonian by the species *subconica* Martin.

Syringothyris and *Spiriferina* are in no way related, either morphologically or phylogenetically.

The small Carboniferous shells that have hitherto been referred

to *Spiriferina* include two types characterized by external differences. Of these two types, one, in which there are numerous ribs and a relatively-large rounded fold and sinus, is relegated to a new genus; while the members of the other type, which include shells with a few large angular ribs, are for the present retained in *Spiriferina*, although the type-species of that genus was derived from the Lias. The subdivision here suggested for the Carboniferous forms will, it is believed, prove to be applicable to the later species also.

2. 'Jurassic Chronology: I — Lias. Supplement 1, West England Strata.' By S. S. Buckman, F.G.S. (Read, in the absence of the Author, by Dr. W. D. Lang, M.A., F.G.S.)

In this communication the following points are discussed:—

(1) The Ammonite and some Brachiopod faunas of the Lias of Gloucestershire and Worcestershire.

(2) A method of faunal plotting as an aid to faunal analysis.

(3) That in the collection, analysis, and comparison of faunas, the following causes of failure have to be considered:—Stratal, Depositional, Faunal, Dispersal, Exposure, Collection, Arrangement, Nomenclature, Fossilization, Preservation, Extraction, Zonalization, Publication; but several of these are not applicable to results derived from the investigation of limited areas.

(4) The evidence appears not only to support the conclusions of the Author's former paper, but to show that in certain cases a fuller sequence of faunal episodes may be required.

(5) The fauna of small Ammonites in these Liassic beds, especially that of small *Schlotheimiæ* at Gloucester, suggests comparison with the faunas of Hierlatz and Spezia. The use of technical terms for different sizes of organisms, especially for small forms, is briefly illustrated.

(6) It is suggested that the strata and faunas of these Continental localities are not so exceptional as they appear to be at first sight; and that English localities may be studied with advantage, in comparison with and explanation of the features of these Continental deposits.

(7) It is found that the preserved strata of the Gloucestershire–Worcestershire Lias under consideration happen in the main to be deposits of dates when the living Ammonites were rather small; while there is faunal failure and presumably stratal failure of the times when large Ammonites flourished. The converse phenomena are mainly illustrated by North-Somerset deposits.

(8) The times when large and small Ammonites lived appear to follow one another like waves, illustrated even in a short table of Liassic deposits.

(9) As a result of the investigations connected with this paper it seems to be advisable, for recording purposes at any rate, to make further subdivisions in the scheme set forth in the Author's former paper.